

AMENDMENTS TO THE SPECIFICATION

Please amend paragraph [0036] as follows.

[0036] A filtration loop 156 includes pump 158, filters 160a, 160b and line 162 for returning filtrate to the quench tower 114, either directly or via the recirculation loop 134. Backwash gaseous medium is provided via line 164 to pressurize and flush the collected fines into line 166 and slurry drum 124. The backwash gaseous medium can be selected from an inert gas, air and fuel gas. One of the filters 160a or 160b is in filter mode, while the other is in backwash mode. For example, valves 168, 170, 172 and 174 are open and valves 175, 176, 180 and 182 are closed when filter 160a is filtering and filter 160b is being backwashed; the valves are switched after the fines have accumulated in filter 160a and it is ready for backwashing. The filtration is preferably continuous and should be at a rate that keeps the fines level from building to excessive levels in the quench oil, preferably no more than 0.5 weight percent fines, more preferably no more than 0.2 weight percent, and yet more preferably no more than 0.1 weight percent fines in the quench oil. As an illustrative example, in a quench tower receiving 50 to 200 lbs/hr catalyst fines in the effluent gas, for example, 100 lbs/hr, then 50,000 lbs/hr of quench oil must be filtered in order to maintain a catalyst concentration

Appl. No. 10/065,376
Response dated January 5, 2006

of 0.2 weight percent in the recirculation loop 134. The backwash contains a high concentration of catalyst fines, on the order of 10 to 20 weight percent. This concentration is reduced to a manageable level, for example, 2 to 4 weight percent, by dilution in the slurry drum 124 with fuel oil from makeup line 184 and/or circulating quench oil from recirculation loop 134 ~~in the slurry drum 124~~. The amount of dilution oil is preferably equal to that required for combustion in the regenerator. If the fines concentration is in excess of a manageable level, additional fuel oil and/or quench oil can be introduced to the slurry drum 124 and this excess can be recycled to the riser via line 127.

Please amend paragraph [0038] as follows.

[0038] In the regenerator 120 (see Figs. 2 and 3), there is a standpipe 118 and plug valve 200. Spent catalyst flows down the standpipe 118 and passes through the catalyst plug valve 200. After passing through the plug valve 200, the catalyst changes direction and flows upwardly through the annulus 202 of the spent catalyst centerwell 204 using a fluidization gas introduced via line 125 to distribution ring 204b positioned in the centerwell 204 below the valve 200. The fluidization medium or gas can be, for example, steam, an inert gas, and fuel gas. Slurry oil (line 126) and a fluidization gas (line 123) are introduced via

line 129 through nozzles 204a. The fluidization gas, for example, steam, facilitates dispersion and atomization of the slurry oil as it discharges into the catalyst in the centerwell 204. The dispersion steam and the slurry oil, which vaporizes on contact with the hot spent catalyst, provide additional fluidization for the catalyst. At this point, vaporization of the slurry oil is required. An oxygen-containing gas is preferably not used as the fluidization gas here in order to avoid, or at least minimize, combustion within the centerwell 204. The catalyst is diverted outwardly into the dense phase bed 122 from the circular slot 206 defined by the upper terminus of the centerwell 204 and an outer periphery of annular plate 208. The annular plate 208 is secured about the standpipe 118 and preferably has an outer diameter at least that of the centerwell 204. In this manner the catalyst is distributed radially outwardly into the dense phase catalyst bed 122 well below its upper surface 209.

Please amend paragraph [0042] as follows.

[0042] The lower portion 404 of a prior art side by side conventional FCC regenerator is shown in Fig. 4. Catalyst is fed to the regenerator via an angled pipe 414, a catalyst slide valve 416, and an inlet 420. The ends of a pair of hydroclones 430 extend below the upper surface 209 of the

Appl. No. 10/065,376
Response dated January 5, 2006

dense bed 122. Combustion air is fed into the dense bed 122 via an air feed apparatus 409.

Please amend paragraph [0045] as follows.

[0045] Further, an FCC unit of side-by-side configuration having a conventional regenerator, for example, the regenerator shown in Fig. 4, can be converted to be a converted FCC unit having a regenerator 400 as shown in Fig. 5, thereby reducing the capital costs associated with the fabrication of a new regenerator. The air supply assembly ~~[[460]]~~ would be removed. The centerwell 204, fluidization medium distribution ring 204b and fuel distribution nozzles 204a would be installed at the interior base of the regenerator within the centerwell 204. The air distribution pipe 210 would be installed around the centerwell 204 and below the radial slot 206. The deflector plate 450 would be installed within the centerwell 204. Pipe 417 with the standpipe portion 418 and annular plate 208 would be installed such that the end of the stand portion 418 extends into the centerwell 204 a sufficient distance above the deflector plate 450 to allow flow of the catalyst and provide adequate deflection of the catalyst flow direction for mixing the catalyst with the fuel oil vaporized within the centerwell 204. The hydroclones 430 may or may not have to be replaced or reconditioned or repositioned within the

Appl. No. 10/065,376
Response dated January 5, 2006

regenerator 400 such that their ends extend below the upper surface 209 of the dense bed 122.